PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

PCS31GQ International application No. International filing data (day/month/year) 13.10.2004 14.10.2003					
This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. This report is also accompanied by ANNEXES, comprising: A more than the applicant and to the International Bureau) a total of 1 sheets, as follows: Sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). Sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the International application as filed, as indicated in item 4 of 80 x No. I and the Supplemental Box. Supplemental Box. Supplemental Box Supplemental Supple	Applicant's or agent's file reference PC531GQ		FOR FURTHER ACT		
International Patent Classification (IPC) or national classification and IPC HO2K2124, HO2K174, HO2K2908, HO2K352, HO2K11.04 Applicant EMERSON APPLIANCE MOTORS EUROPE S.R.L. 1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. 2. This RePORT consists of a total of 5 sheets, including this cover sheet. 3. This report is also accompanied by ANNEXES, comprising: a. Sent to the applicant and to the International Bureau) a total of 1 sheets, as follows: Sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). sheets which supersede earlier sheets, but which this Authority (see Rule 70.16 and Section 607 of the Supplemental Box. b. (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)), containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions). 4. This report contains indications relating to the following items: Box No. II Priority Box No. II Non-establishment of opinion with regard to novelty, inventive step and industrial applicability Box No. VI Certain defects in the international application Box No. VI Certain defects in the international application Date of submission of the demand Date of submission of the demand Date of completion of this report Date of completion of this report Only 2005 Name and mailing address of the International preliminary examining authority: Europsan Patent Wilk: Pays Bas Table 2007 1. 32 17 34 36 240 Tits 31 651 epp nl	International application No.		international filing date (da		
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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No. PCT/EP2004/011476

	Box No. I Basis of the repor	t · · · · · · _ · _			
1.	. With regard to the language , this report is based on the international application in the language in v filed, unless otherwise indicated under this item.				
	☐ This report is based on tran which is the language of a	This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:			
	☐ publication of the internation	der Rules 12.3 and 23.1(b)) ational application (under Rule 12.4) v examination (under Rules 55.2 and/or 55.3)			
2.	With regard to the elements* of the international application, this report is based on (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):				
	Description, Pages				
	1-9	as originally filed			
	Claims, Numbers				
	2-9	as originally filed			
	1	as amended (together with any statement) under Art. 19 PCT			
	Drawings, Sheets				
	1/7-7/7	as originally filed			
	☐ a sequence listing and/or a	any related table(s) - see Supplemental Box Relating to Sequence Listing			
3.	. The amendments have res	☐ The amendments have resulted in the cancellation of:			
	the description, pages				
	☐ the claims, Nos.☐ the drawings, sheets/fig	gs .			
	☐ the sequence listing (si	pecify):			
	☐ any table(s) related to s	sequence listing (specify):			
4.	☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).				
	the description, pages				
	☐ the claims, Nos.☐ the drawings, sheets/fig	gs			
	☐ the sequence listing (s)	pecify):			
	☐ any table(s) related to				
	+ Tf item 4 annlies :	some or all of these sheets may be marked "superseded."			

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No. PCT/EP2004/011476

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)

Yes: Claims

1-9

No: Claims

Inventive step (IS)

Yes: Claims 1

1-9

No: Claims

Industrial applicability (IA)

Yes: Claims

1-9

No: Claims

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following document:

D1: US 2002/149285 A1 (TSO-KUO YIN ET AL) 17 October 2002 (2002-10-17)

1. Document D1 is regarded as being the closest prior art to the subject-matter of claim 1 and shows (the references in parentheses applying to this document):

a rotary electrical machine (Fig. 4) with a rotor (6) with a permanent magnet (65) for producing an annular distribution of magnetic polarities (N, S) of angularly alternating sign about the axis of rotation of the rotor (6), within a magnetized surface lying in a plane perpendicular to said axis of rotation and a stator (7) that includes: a flow-conveying structure (72) formed of magnetically conductive material (paragraph [0029]), said structure has an annular base portion (7) from which the first and second arms (71, 72) extend parallel to the axis of the rotor, said arms being situated essentially at a first and a second radial distance, respectively, from said axis and angularly alternating with respect to each other (fig 4); the ends of said first and second arms opposite to the base portion (7) frontally face said magnetized surface (65) of the rotor (6) from which they are separated by and air-gap; and a winding (4) arranged coaxially with the rotor, in an annular region lying between said first and second arms (71, 72) of the flow conveying structure.

The difference between the prior art as defined by the teachings of D1 and claim 1 are the following features:

- a)- the flow-conveying structure is formed as one piece with a pressure-shaped mass of insulated ferromagnetic particles and
- b)- the ends of said first and second arms have terminal surfaces which are inclined all a same direction with respect to a plane transverse to said axis

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (SEPARATE SHEET)

International application No.

PCT/EP2004/011476

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

The problems to be solved by the present invention may be regarded as:

allow a torque of a predetermined value to be produced by the machine upon start-up.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

as a consequence of the inclination of the terminal surfaces of the arms of the stator that face the rotor the air gap between them and the rotor varies cyclically in amplitude. This allows the stator and rotor to rest in a predetermined position upon stoppage of the machine and ensures the generation of a torque of sufficient magnitude upon start-up.

- 2. Claims 2-9 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.
- 3. The amendment of the independent claim by the addition of the feature "the ends of said first and second arms have terminal surfaces which are inclined all a same direction with respect to a plane transverse to said axis" is not deemed to introduce new subject matter beyond the original disclosure (Article 19(2)/Article 34(2)(b) PCT) because is it was originally disclosed in the description (page 6 lines 12-19 and figure 7 of the drawings).

[20] 13

CLAIMS

1. Rotary electric machine (1) comprising:

a rotor (2) with at least one permanent magnet (5), for producing an annular distribution of magnetic polarities (N, S) of angularly alternating sign about the axis of rotation (A-A) of the rotor (2), within a magnetized surface (5) lying in a plane essentially perpendicular to said axis (A-A), and

a stator (3) including:

a flow-conveying structure (16) having an annular base portion (17) from which first and second arms (18; 19) extend substantially parallel to the axis of the rotor (A-A), said arms being situated essentially at a first and a second radial distance, respectively, from said axis (A-A) and angularly alternating with respect to each other; the ends (18a; 19a) of said first and second arms (18, 19) opposite to the base portion (17) frontally facing said magnetized surface (5a) of the rotor (5) from which they are separated by an air-gap (21); and

a winding (23) arranged coaxially with the rotor (2), in an annular region lying between said first and second arms (18; 19) of the flow-conveying structure (16);

characterised in that said flow-conveying structure (16) is formed as one piece with a pressure-shaped mass of insulated ferromagnetic particles, and in that the ends of said first and second arms (18, 19) thereof have terminal surfaces (18a, 19a) which are inclined all in a same direction with respect to a plane transverse to said axis (A-A).

2. Rotary electric machine according to Claim 1, in which the overall number of said first and second arms (18, 19) of the flow-conveying structure (16) is equal to the number of the magnetic polarities (N, S) produced on said surface (5a) of the rotor (5).